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Mathematics 6

Module 6

**Home Instructor's Guide
and Assignment Booklet**

6A



**Learning
Technologies
Branch**

Alberta
LEARNING

Mathematics 6
Module 6: Angles, Shapes, and Objects
Home Instructor's Guide and Assignment Booklet 6A
Learning Technologies Branch
ISBN 0-7741-2388-5

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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Module 6: Angles, Shapes, and Objects

Overview

Module 6 introduces the student to angles and their uses in the everyday world. The student classifies angles by size, estimates and measures angles, and draws angles.

Activities in this module extend the student's understanding of polygons. The student classifies triangles according to the length of their sides and the measures of their angles. The student investigates symmetry in polygons and uses this property to classify quadrilaterals.

The student further explores 3-D objects and 2-D shapes. The student draws pictures and skeletons of 3-D objects using plain paper, oblique grids, and isometric paper. The student uses square grid paper to copy 2-D pictures.

Assessment

At the end of each of the three lessons in Module 6, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

Students are also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

Pacing

The module has been designed so that the student can work at his or her own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing extra time for review of basic facts and project work, Module 6 will take the student 3 to 4 weeks to complete.

Lesson 1: Angles

Overview

The activities in Lesson 1 introduce the student to angles. The student identifies many different kinds of angles used in the everyday world. The student will classify angles, estimate and measure angles, and draw angles.

Special Requirements

The following materials are required for Lesson 1:

- tracing paper
- protractor
- circular object
- cardboard box
- thin strips of paper
- thumbtack
- scissors
- pencil crayons
- pattern blocks

Sharing Time

Students are asked to discuss what they are learning with their home instructor once in Lesson 1—at the end of Activity 2.

Activity 2 Sharing Time

Practice and Homework Book, page 93, questions 1 to 4

1. 30° 2. $360^\circ - 74^\circ = 286^\circ$ 3. 106° 4. 50°

Lesson 2: Polygons

Overview

In this lesson the student reviews and extends his or her understanding of polygons. The student classifies triangles according to the sizes of their angles. The student investigates symmetry in polygons and uses this property to classify quadrilaterals.

Special Requirements

The following materials are required for Lesson 2:

- about 3 dozen bendable straws (12 each of three different colours)
- scissors
- large sheet of paper (about 60 cm by 60 cm)
- protractor
- sheets of paper
- pencil crayons
- geoboards and bands **or** square and isometric dot paper
- ruler

ASSIGNMENT BOOKLET 6A

PAT0610 Mathematics 6

Module 6: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's Comments and Questions

Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Additional Information:

FOR HOME INSTRUCTOR USE

(if label is missing or incorrect)

Student File Number:

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for
correct course and module.*

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

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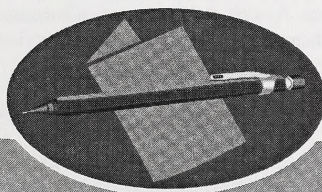
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Mathematics 6

Module 6

Angles, Shapes, and Objects

ASSIGNMENT BOOKLET 6A



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FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	30	
Lesson 2 Assignment	30	
	60	

Teacher's Comments

Mathematics 6
Module 6: Angles, Shapes, and Objects
Assignment Booklet 6A
Learning Technologies Branch

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ASSIGNMENT BOOKLET 6A

MATHEMATICS 6—MODULE 6: ANGLES, SHAPES AND OBJECTS

Your mark for this module will be determined by how well you do your assignments in the Assignment Booklets.

There are two lesson assignments in this Assignment Booklet. The total value of these assignments is 60 marks. The value of each question is stated in the left margin.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

Be sure to proofread each assignment carefully.

30

Lesson 1 Assignment: Angles

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

12

1. Use a protractor to measure all the angles inside the following pattern blocks: yellow hexagon, red trapezoid, blue rhombus, tan rhombus, orange square, and green triangle. Trace each of these shapes. Label the angles as acute (a), obtuse (o), or right (r), and write their measures in degrees. There is more room for your answer on the next page.

2. Combine pattern blocks to form each of the following new angles. Trace each example and label it with the sums of the angle measures.

②

- a. Combine two blocks to form an acute angle.

②

- b. Combine three blocks to form an obtuse angle.

②

c. Combine two or three blocks to form a right angle.

②

d. Combine four blocks to form a straight angle.

- ② 3. a. On the following pizza, sketch four pieces of different sizes to reveal these angles: one 30° angle, one 60° angle, one 90° angle, and one 180° angle.



- ② b. Which piece would you be least likely to choose? Explain why.

- ② 4. a. Sketch a picture of a clock face that reads 1:15. Explain how you decided where to place the hour hand and the minute hand.

②

- b. What is the approximate measure of the angle between the hour hand and the minute hand? Explain how you made your estimate.

②

- c. What is the exact measure of the angle between the hour hand and the minute hand? Explain how you found the answer.

30

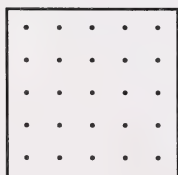
Lesson 2 Assignment: Polygons

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

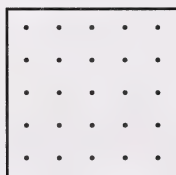
⑥

1. Draw one of each of the following triangles by joining dots on the dot paper geoboards. Use elastic bands and a geoboard to help you, if you have them.

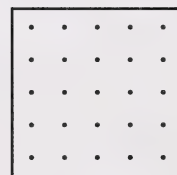
a. obtuse scalene



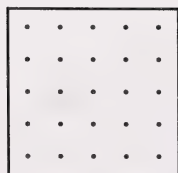
b. right scalene



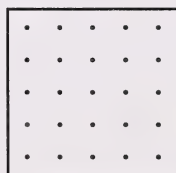
c. acute scalene



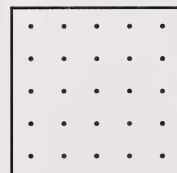
d. obtuse isosceles



e. right isosceles

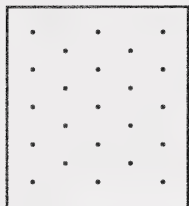


f. acute isosceles

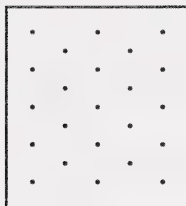


- ⑥ 2. Draw one of each of the following triangles by joining dots on the dot paper geoboards. Use elastic bands and an isometric geoboard to help you, if you have them.

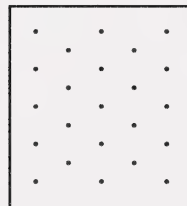
a. acute equilateral



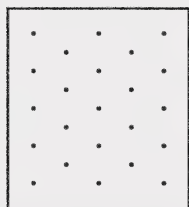
b. acute isosceles



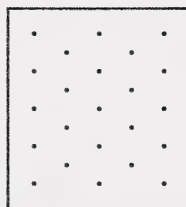
c. acute scalene



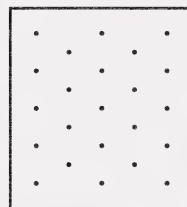
d. obtuse isosceles



e. obtuse scalene

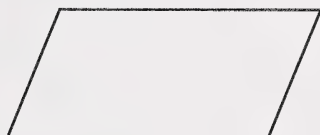


f. right scalene



- ⑫ 3. Name each of the following quadrilaterals as many ways as you can, tell how many lines of symmetry it has, and draw all possible lines of symmetry.

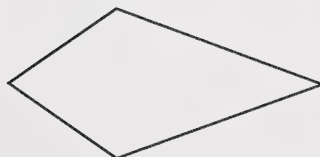
a.



Names: _____

Number of lines of symmetry: _____

b.



Names: _____

Number of lines of symmetry: _____

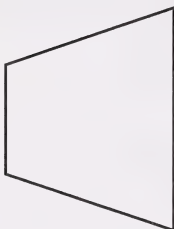
c.



Names: _____

Number of lines of symmetry: _____

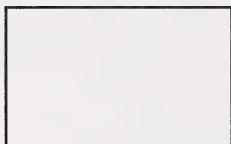
d.



Names: _____

Number of lines of symmetry: _____

e.



Names: _____

Number of lines of symmetry: _____

f.



Names: _____

Number of lines of symmetry: _____

4. If a polygon is regular, explain what you know is true about

①

a. its sides

①

b. its angles

①

c. the number of lines of symmetry it has

①

5. a. Draw a regular hexagon and show all its lines of symmetry.

②

- b.** Draw a hexagon that has exactly one line of symmetry and draw the line of symmetry.

Mathematics 6

Module 6

**Home Instructor's Guide
and Assignment Booklet**

6B



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Mathematics 6
Module 6: Angles, Shapes, and Objects
Home Instructor's Guide and Assignment Booklet 6B
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Lesson 3: Drawing Objects and Shapes

Overview

In this lesson, the student explores 3-D objects and 2-D shapes. The student draws pictures and skeletons of 3-D objects using plain paper, oblique grids, and isometric paper. The student uses square grid paper to copy 2-D pictures.

Special Requirements

The following materials are required for Lesson 3:

- ruler
- pencil crayons
- plain paper
- oblique grid paper
- isometric grid paper
- isometric dot paper
- square grid paper
- centicubes

ASSIGNMENT BOOKLET 6B

PAT0610 Mathematics 6

Module 6: Lesson 3 Assignment and Numbers in the News Project

Home Instructor's Comments and Questions

Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Additional Information:

FOR HOME INSTRUCTOR USE

(if label is missing or incorrect)

Student File Number:

Date Submitted:

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Name

Address

Postal Code

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Teacher's Signature

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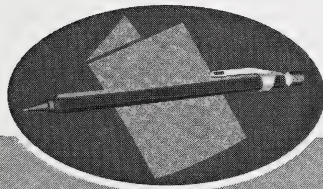
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Mathematics 6

Module 6

Angles, Shapes, and Objects

ASSIGNMENT BOOKLET 6B



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LEARNING

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Summary

	Total Possible Marks	Your Mark
Lesson 3 Assignment	30	
Numbers in the News Project	10	
	40	

Teacher's Comments

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Module 6: Angles, Shapes, and Objects
Assignment Booklet 6B
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ASSIGNMENT BOOKLET 6B

MATHEMATICS 6—MODULE 6: ANGLES, SHAPES, AND OBJECTS

Your mark for this module will be determined by how well you do your assignments in the Assignment Booklets.

There is one lesson assignment and a Numbers in the News project in this Assignment Booklet. The total value of these assignment is 40 marks. The value of each question is stated in the left margin.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

Be sure to proofread each assignment carefully.

30

Lesson 3 Assignment: Drawing Objects and Shapes

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

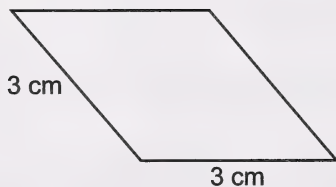
1. A small piece of space junk was described as a square prism measuring 3 cm by 3 cm by 4 cm.

3

- a. Describe all the faces this prism has.

③

b. Draw this prism. Use the base to help you.



2. Turn to page 291 of your textbook to Skill Bank Looking Back.

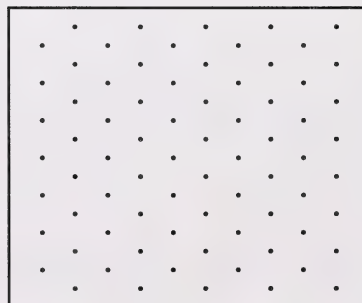
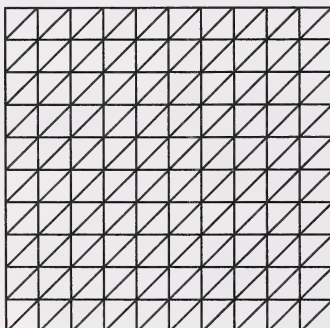
a. Do question 1.

②

a. _____ b. _____

④

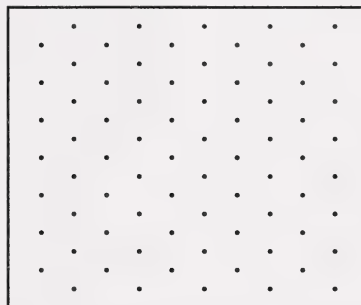
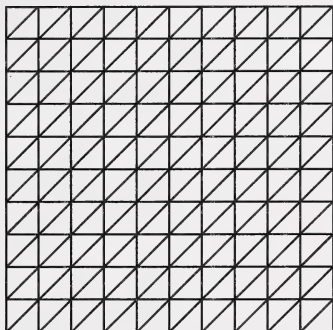
b. Draw the prism in question 1.b. on oblique grid paper and on isometric dot paper.



- ③ c. Do question 2.
- a. _____ b. _____ c. _____

3. A cube has an edge of three units.

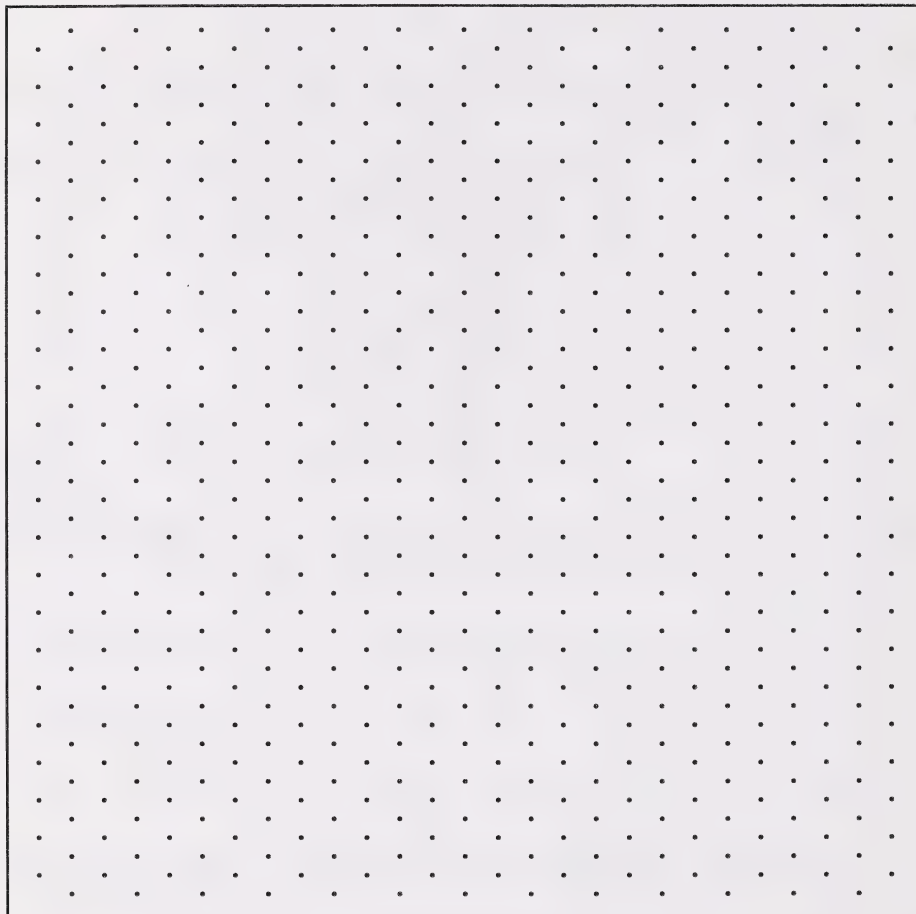
- ④ a. Draw the cube on oblique grid paper and on isometric dot paper.



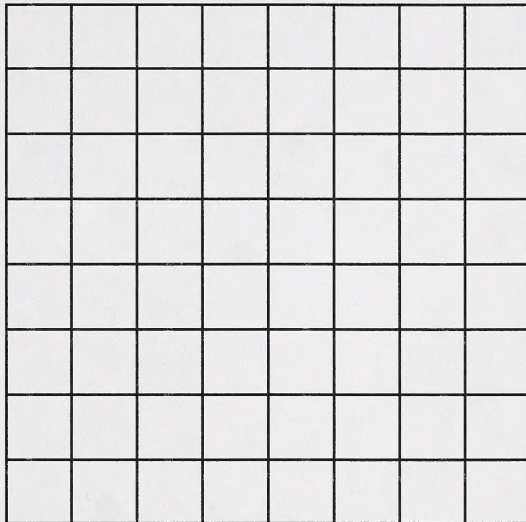
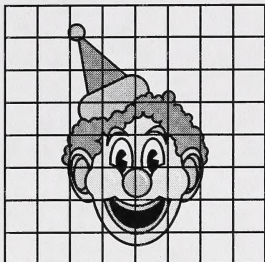
- ③ b. How is drawing the cube on isometric paper different than drawing it on oblique paper? Explain why this is so.

③

4. A rectangular prism is 1 unit by 2 units by 3 units. Draw two views of this prism (each with a different front face) on the following isometric dot paper.



5. Enlarge the following picture by copying it from the grid on the left to the grid on the right.



10

Numbers in the News

Go through the Scavenger Hunt list for Module 6 to make sure you have clipped at least one example for each question. Ask your home instructor to check the samples you found. Choose the samples you wish to use, and label each one with the Scavenger Hunt number it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete? (Have I included all my samples?)
- Do my samples show the ideas clearly? (Are my examples appropriate?)
- Did I take care to be neat when organizing and labelling my work?

